

appropriate organisation it is nearly as difficult to find their address. It is, therefore, of considerable comfort to find the crop protection directory.

The volume is packed with names, addresses, services offered and contact names together with the telephone and fax numbers. Sixteen chapters provide coverage from registration, through the agrochemical business including research and development groups, distributors, spraying contractors, plant breeders, biotechnologists and biocontrol experts and education. Surprisingly, there are separate sections on stored crops and rodent, small mammal and bird control and the section on the environment does not include small contract companies able to investigate the fate of a chemical after application—this being included under the registration, legislation heading. If it is necessary to separate out animal pest control why not do the same for insects, weeds and crop pathogens? But here I am just being fussy. The headings under which each reader would place the organisations are probably different and a comprehensive index helps you through the book. It is sometimes hard to tell a large company with a broad service base from a one-man consultancy that might make the choice of collaborator difficult. The contact person is also different between operations with some citing their Research and Development Director whilst others give the name of the 'second biologist'. I was also surprised to see so many sections dedicated to PSD, York. The book tells us that UK registration is the costliest in Europe and with all these departments to support it is no wonder!

Overall the book is an excellent addition to the data base for the crop protection industry. It will find a key place on my bookcase and will be used often. I sometimes wonder how I found this information before the book was published. I look forward to the international edition.

Leonard G. Copping

The mammalian metabolism of agrochemicals. D. H. Hutson & G. D. Paulson, John Wiley & Sons Limited, Chichester, 1995, x + 340 pp., price UK £75.00. ISBN 0 471 951 55 2

This book is Volume 8 of the series Progress in Pesticide Biochemistry & Toxicology and consists of eight chapters covering a diverse range of topics associated with mammalian metabolism of agrochemicals.

The first chapter (P. Milburn) addresses the fate of xenobiotics and includes information on the types of biotransformation pathways with reference to specific examples, metabolizing enzyme systems and excretion processes. Some aspects such as novel and reactive intermediates and metabolites receive limited attention but the scope of the chapter is very broad.

Chapter 2 (D. Needham and I. R. Challis) deals with the regulatory requirements and practical aspects of rodent metabolism studies. This is a useful chapter for those not conversant with these aspects since they are seldom covered in other review articles.

Chapter 3 (N. E. Weber and S. K. Collinge) is focused on regulatory requirements for the investigation of metabolite residues in food-producing animals with perspectives from the FDA (veterinary drugs and feed additives) and the EPA (agrochemicals). This is an exceedingly valuable, well constructed concise review.

The next three chapters concern detailed reviews of the mammalian biotransformation of important compounds under the classifications insecticides (J. E. Chambers, T. Ma and H. W. Chambers) herbicides (L. A. P. Hoogenboom) and fungicides (H. Kaneko, N. Isobe and J. Miyamoto). All these chapters are well presented and provide excellent reference sources on the major metabolism pathways for the diverse range of structural types of compound.

Chapter 7 (P. L. Batten and D. H. Hutson) is a perceptive review of the issues associated with species differences in metabolism and the problems associated with extrapolation to man as part of the safety evaluation of agrochemicals. It is apparent that controlled studies in human volunteers using established ethical review procedures can provide data of considerable value for human safety evaluation.

The last chapter (R. C. Beier) addresses the issue of naturally occurring toxins in food, many of which may function as natural pesticides. This is an informative and interesting review which suggests that there may be potentially more serious hazards to human health than synthetic pesticide residues in food.

Overall the volume is a valuable reference source for those involved in agrochemical research and development. It is well-edited with few errors and can be recommended as a worthwhile addition to scientific libraries.

D. R. Hawkins